



AUGER-ANCHORED BEACH UMBRELLA
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BACKGROUND OF THE INVENTION

[0001] Beach umbrellas are used to create an area shaded from the sunlight beneath the umbrella canopy. They are particularly useful for bathers at a beach or swimming pool, where there is generally a lack of trees or roofed structures to provide shade. Because a bather's skin is largely exposed, there is a greater need to provide protection from harmful ultraviolet rays, which may cause sunburn or melanomas. The shade and shelter provided by a beach umbrella is also useful in protecting a bather's valuables and shielding perishable items from direct sunlight.

[0002] The principal problem with beach umbrellas has been finding a means of securely anchoring them in the ground. Lack of secure anchoring places a limit on the size of the umbrella canopy that can practically be utilized, since larger canopies are heavier and more vulnerable to gusts of wind. Lack of secure anchoring also makes it impractical to utilize mechanisms for tilting the umbrella canopy in the direction of the sun so as to maximize the shaded area.

[0003] Previous attempts to address this problem have utilized anchoring devices which must be manually inserted or buried in the ground. Such devices are disclosed by Beiter, U.S. Patent No. 2,209,504, Pesaturo, U.S. Patent No. 2,759,486, Webb, U.S. Patent No. 4,756,129, Alexander, U.S. Patent No. 4,803,812, Padin, U.S. Patent No. 4,850,564, Robinson, U.S. Patent No. 5,199,361, Buttimore, U.S. Patent No. 5,636,944, Doreste, U.S. Patent No. 6,328,046 B2, Hollenbeck, U.S. Patent No. 6,354,554 B1, and Girard, U.S. Patent No. 6,412,748 B1. However, each of these references suffers from

the disadvantage of depending on the physical strength of the person inserting or burying the umbrella pole in the ground. Frail individuals and children may lack the requisite physical strength to effectively utilize these anchoring devices. Even a robust individual may have difficulty when the ground is hard. Moreover, manual insertion or burial is laborious and time-consuming, and it often does not achieve the depth of ground penetration needed to securely anchor the umbrella.

[0004] For the foregoing reasons, there is a need for a beach umbrella having a motor-driven anchoring device, which will enable any user to securely anchor the umbrella in a variety of terrains.

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SUMMARY OF THE INVENTION

[0005] The present invention is directed to a device that satisfies the need for a beach umbrella having a motor-driven anchoring device. The spreadable canopy is typical in design for umbrella canopies as they are presently known in the art. Due to the improved anchoring afforded by the present invention, however, a canopy larger than those typically found on beach umbrellas may be utilized. The improved anchoring of the present invention also enables the use of a jointed canopy member by which the canopy may be tilted in the direction of the sun so as to maximize the area of shade cast by the canopy.

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[0006] A self-anchoring beach umbrella having features of the present invention comprises two principal parts. First, it has a canopy member, which consists of an upper tubular element and a lower tubular element. A spreadable canopy is attached to the upper tubular element. Within the lower tubular element of the canopy member is formed an axial lumen.

[0007] The second part of the present invention is a pole member having an upper element formed for insertion into the axial lumen of the canopy member. Within or mounted upon the pole member is a battery chamber containing one or more batteries. The battery chamber has a means for accessing the batteries when they need to be replaced or recharged. The pole member also has a motor element comprising a reversible electric motor, which has a shaft through which a rotary torque is generated when the motor is activated. The shaft is axially disposed on the lower end of the motor. An auger is coupled to the shaft so that it rotates when the motor is activated.

[0008] Since the motor is reversible, it may be activated in the forward or reverse direction. The forward direction of the motor is considered to be clockwise for a right-hand-screw type auger (i.e., one in which the helical flighting wraps around the auger's axis in the clockwise direction), and counterclockwise for a left-hand-screw type auger (i.e., one in which the helical flighting wraps around the auger's axis in the counter-clockwise direction). Conversely, the reverse direction of the motor is considered to be counter-clockwise for a right-hand-screw type auger and clockwise for a left-hand-screw type auger. When the motor is activated in the forward direction, the effect of the auger rotating in the ground will be to lift the soil or sand, thereby excavating a hole into which the umbrella's pole member may be inserted. When the motor is activated in the reverse direction, the effect of the auger rotating in the ground will be to push the excavated soil or sand back down into the hole, thereby causing the pole member to extract itself from the ground.

[0009] The speed and direction of the reversible electric motor is controlled by a switch mounted on the motor element of the pole member. The switch is electrically

connected to the batteries and the motor. Optimally, the switch is located on a handle attached to the motor element of the pole member. The handle enables the user to guide the auger and apply a supplemental force in the direction of the auger's motion. Optionally, a positive action type switch may be utilized, such that the direction of the pressure on the switch controls the direction of the motor, and the amount of pressure on the switch regulates the speed of the motor. Such positive action switches are typically used on hand-held electric power tools.

[0010] In an alternate embodiment, the auger is detachable from the motor shaft so that it may be replaced if damaged. This feature also enables the use of one or more alternate augers designed for different ground conditions.

[0011] Due to its improved anchoring, the present invention may optimally utilize a tilting canopy by means of a joint between the upper and lower tubular elements of the canopy member. Using the joint, the canopy is tilted in the direction of the sun to maximize the area of shade cast by the canopy.

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BRIEF DESCRIPTION OF THE DRAWING

[0012] Fig. 1 is a front view of a self-anchoring beach umbrella embodying features of the present invention.

[0013] Fig. 2 is a cross-sectional view of the battery chamber and the motor element.

[0014] Fig. 3 is a circuit diagram of the reversible electric motor, the switch and the batteries.

DESCRIPTION OF THE INVENTION

[0015] As shown in Fig. 1, a self-anchoring umbrella embodying the features of the present invention **10** comprises a canopy member **11** and a pole member **12**. The canopy member **11** is comprised of an upper tubular element **13** and a lower tubular element **14**. The pole member **12** is comprised of an upper element **15**, a motor element **16**, and an auger **17**.

[0016] A spreadable canopy **18** is connected to and supported by the upper tubular element **13** of the canopy member **11**. Within the lower tubular element **14** of the canopy member **11** is formed an axial lumen **19**. The upper element **15** of the pole member **12** is formed to slide snugly into the axial lumen **19** of lower tubular element **14** of the canopy member **11**.

[0017] As shown in Fig. 2, the motor element **16** of the pole member **12** comprises a reversible electric motor **27**, having on its lower end an axially-disposed shaft **20**, which is coupled to the auger **17**. Mounted upon the motor element **16** of the pole member **12** is a switch **21**. In the preferred embodiment, the switch **21** is mounted on a handle **22** attached to the motor element **16** of the pole member **12**. As shown in Fig. 3, the switch **21** is electrically connected to the reversible electric motor **27** and to one or more batteries **26** enclosed in a battery chamber **23**, which is within or mounted upon the pole member **12**. Access to the batteries **26** is provided by a means **24** for accessing the battery chamber **23**, which access means may be a cap, panel or similar structure which screws or slides into the exposed side of the battery chamber **23**.

[0018] In the preferred embodiment, the switch **21** is a positive action switch which is positioned on the handle **22** in such a way that the operator may regulate the

direction and speed of the reversible electric motor 27 while using the handle 22 to guide the pole member 12 into the ground. In the neutral position (i.e., no pressure applied) the switch 21 turns the reversible electric motor 27 off. When downward pressure is applied to the switch 21, the motor 27 is activated in the forward direction, causing the auger 17 to rotate in the direction in which its helical flighting 25 wraps around the axis of the auger. When upward pressure is applied to the switch 21, the motor 27 is activated in the reverse direction, causing the auger 17 to rotate in the direction opposite to that in which its helical flighting 25 wraps around the axis of the auger. The amount of pressure applied to the switch 21 in the downward or upward direction regulates the speed of the reversible electric motor 27 in the forward or reverse direction.

[0019] In an alternate embodiment, the auger 17 is detachably coupled to the shaft 20 of the reversible electric motor 27, to facilitate replacement of a damaged auger and to enable use of multiple auger configurations designed for different terrains. In another alternate embodiment, a tiltable joint means is provided between the upper tubular element 13 and the lower tubular element 14 of the canopy member 11, thereby enabling the canopy 18 to be tilted about the axis of the umbrella.

[0020] The design of the canopy 18 and the means of its attachment to the upper tubular element 13 of the canopy member 11 is typical for beach umbrella canopies as they are presently known in the art. The canopy member 11 may be fabricated of a lightweight, durable tubular metal or plastic material of the types presently known in the art. In the preferred embodiment, the canopy member 11 has a circular cross-section not exceeding six inches in diameter. The upper element 15 of the pole member 12 has a cross-section which fits snugly into the axial lumen 19 of the lower tubular element 14 of

the canopy member 11 and may be fabricated of a light-weight, durable metal or plastic material of the types presently known in the art. In the preferred embodiment, the upper element 15 of the pole member 12 has a circular cross-section not exceeding six inches in diameter.

5 [0021] The motor element 16 of the pole member 12 comprises a reversible electric motor 27 encased in tubular sleeve which may be fabricated of a light-weight, durable metal or plastic material of the types presently known in the art. The reversible electric motor 27 is the type typically used in small power tools, such as hand-held drills. The motor 27 is electrically connected to the batteries 26 in the battery cavity 23 through
10 the switch 21. In the preferred embodiment, the switch 21 is located on the handle 22 which is mounted on the motor element 16 of the pole member 12. The switch and the handle may be fabricated of a light-weight, durable metal or plastic material of the types presently known in the art.

 [0022] The auger 17 has a cylindrical axis about which is wrapped helical
15 flighting 25. The diameter of the auger 17 and the width and pitch of the helical flighting 25 are determined by the type of terrain in which the beach umbrella 10 will be used. The top end of the auger 17 is designed to be coupled to the shaft 20 of the reversible electric motor 27. In the preferred embodiment, the auger 17 is fabricated of a steel alloy suitable for prolonged exposure to a salt-water environment, and the bottom end of the
20 auger 17 is conical in shape to facilitate insertion into the ground.

 [0023] The operator of the invention 10 finds a desired location and takes hold of the pole member 12 by the handle 22, pointing the bottom end of the auger 17 into the ground. The operator then activates the switch 21 in the forward direction, causing the

auger to bore into the ground. In the preferred embodiment, the operator controls the speed of the auger 17 by the amount of pressure applied to the switch 21. Using the handle 22, the operator applies a downward pressure and guides the pole member 12 as the auger 17 bores down into the ground to a sufficient depth to secure the pole member 12. The operator then lifts the canopy member 11 and inserts it over the upper element 15 of the pole member 17 in such a way as the upper element 15 slides into the axial lumen 19 formed within the lower tubular element 14 of the canopy member 11. At this juncture, the beach umbrella 10 is firmly anchored in the ground and the canopy 18 may be opened. If the optional tiltable joint is incorporated in the canopy member 11, the canopy 18 may also be tilted so as to maximize the area of shade cast by the canopy 18.

[0024] When the operator is ready to depart, the canopy 18 is closed and the canopy member 11 is lifted up so as to separate it from the pole member 12. The operator takes hold of the pole member 12 by the handle 22 and activates the switch 21 in the reverse direction, causing the auger 17 to disengage from the ground. Using the handle 22, the operator applies an upward pressure and guides the pole member 12 as it emerges from the ground. Once the pole member 12 has been removed from the ground and the auger 17 cleared of sand or soil, the operator may elect to either transport and store the canopy member 11 and pole member 12 separately or reassemble them so as to transport and store the beach umbrella 10 as one unit.

[0025] The present invention is, therefore, well adapted to satisfy the need for a beach umbrella which can be securely anchored in the ground without requiring significant physical strength and exertion on the part of the user. The present invention,

moreover, allows a significantly larger and heavier canopy to be deployed and makes it practicable to utilize a tiltable canopy.

[0026] While the present invention has been described in some detail with reference to certain currently preferred embodiments, other embodiments are feasible and
5 will readily suggest themselves to those skilled in the art. Therefore, the spirit and scope of the appended claims is not limited to the description of the preferred embodiments contained herein.